

1/10/18 "A mistake is food for a new invention." -Anonymous

HW: "Domain Algebraically" w/s
Test 3 on Tuesday 1/16

AIM: How do we find Domain Algebraically?

Warm Up:

1) What situations do we have restrictions on the values that x can be?

- When we have variables under radical
ex: \sqrt{x} x can't be negative

- When we have a variable in the denominator
ex: $\frac{x+5}{x-3}$ x can't be 3

Situations to Consider our domain:

1) Fraction: Set denominator = 0
and solve.

⊗ These values are NOT in the domain

2) Radical: Set the radicand (What is under $\sqrt{\quad}$)
to be ≥ 0 and solve.

3) Radical in the denominator of a fraction:
Set the radicand to be > 0
and solve.

II. Find the **domain** of each

1. $y = \frac{1}{x-3}$

$$x-3 \neq 0$$

$$x \neq 3$$

Domain:

$$x \neq 3$$

or

$$(-\infty, 3) \cup (3, \infty)$$

$$x < 3 \text{ or } x > 3$$

2. $y = \frac{5}{x^2-4}$

$$x^2 - 4 = 0$$

$$(x-2)(x+2) = 0$$

$$x=2 \text{ or } x=-2$$

Domain

$$x \neq -2, 2$$

5. $y = \sqrt{x-5}$

$$x-5 \geq 0$$

$$\begin{array}{r} +5 \quad +5 \\ \hline \end{array}$$

$$x \geq 5$$

Domain:

$$x \geq 5$$

6. $y = \frac{5}{\sqrt{x-3}}$

$$x-3 > 0$$

$$\begin{array}{r} +3 \quad +3 \\ \hline \end{array}$$

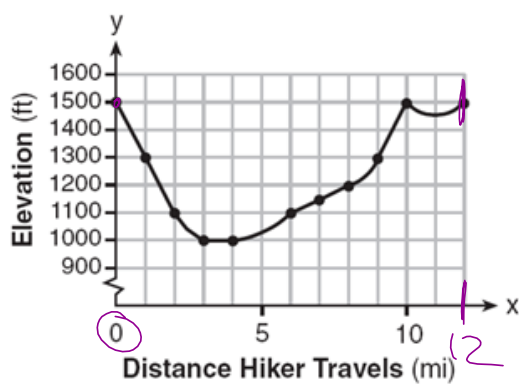
$$x > 3$$

Domain:

$$x > 3$$

III.

- 1) The accompanying graph shows the elevation of a certain region in New York State as a hiker travels along a trail.



What is the domain of this function?

- (1) $1,000 \leq x \leq 1,500$
(2) $1,000 \leq y \leq 1,500$
(3) $0 \leq x \leq 12$
(4) $0 \leq y \leq 12$